

RELATIONSHIPS AMONG BODY MEASUREMENTS
OF TWO AGE GROUPS OF WOMEN AND
THE APPAREL SIZING STANDARD

By

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CHAPTER I

INTRODUCTION

Due to an increased life expectancy and a decline in the number of births there is an increasing proportion of people age 65 and over in the United States. According to 1970 census figures the 65 and over group numbered 20 million and represented 9.9 percent of United States population (Long, 1971). Census Bureau reports for 1980 indicated that this segment of the population had increased to 25.5 million and represented 11.3 percent of the total population (Lane, 1981). The rapid increase in the numbers of this age group has been predicted to continue well into the twenty-first century. Census Bureau projections for the year 2000 indicated that 12.2 percent of the population will be composed of people age 65 and over; by 2035 they will represent 18.3 percent (Fowles, 1978).

Census figures for Oklahoma indicated that 12.5 percent of the population in Oklahoma was composed of people age 65 and over in 1980. Approximately 60 percent of this age group were women (U. S. Department of Commerce, 1981).

Clothing can help older people meet a variety of needs. According to Havighurst (1952), older people have certain needs that are common to all people. These include the need for (1) emotional security and affection, (2) social recognition and status and (3) a sense of worth and self-respect (Havighurst, 1952). These needs can be

partially met through attention to personal appearance and clothing, thereby making the task of adjusting to this period of life less difficult.

Research by Bader (1963) indicated that many older women are interested in clothing. Bratcher (1975) found that older women in her study acquired a substantial amount of clothing by purchasing ready-to-wear garments. In several studies the fit of clothing was considered to be a major factor in the selection of ready-to-wear (Ebeling, 1961; Shipley, 1961; Walker, 1972). Many older women in the studies expressed difficulty in finding outer garments that fit properly.

Voluntary Product Standard PS 42-70 (U. S. Department of Commerce, 1971), a sizing guideline for women's patterns and apparel, has been established by the National Bureau of Standards. Measurements listed in the guideline were based on an anthropometric study of United States women in 1939 and 1940. Over 50 percent of women in the original study were between the age of 18 and 34; only two percent were age 65 or over. Although it was hoped that the size classifications and body measurements in the guideline would aid in producing better fitting and more consistently sized garments, older women have continued to express difficulty in finding ready-to-wear garments that fit properly. A need exists for more research on the relationships of body measurements among younger and older women and PS 42-70.

Several studies have sought to identify areas of the body that may cause fitting problems in older women. Frazier (1975) compared the measurements of 55 women age 62 and over with PS 42-70 measurements; however, the largest size grouping used for comparison was composed of only nine women. Felkner (1978) compared measurements of 99 women age

65 and over with PS 42-70 (U. S. Department of Commerce, 1971) measurements, but in this study the number of women in each size grouping was also small. (There is a need for more research using measurements from a larger number of women in one size category as a basis for comparison with the sizing guideline.)

Purpose and Objectives

The purpose of the study was to analyze relationships among body measurements of two age groups of women and compare them with the measurements listed in Voluntary Product Standard PS 42-70 (referred to hereafter as PS 42-70). Specific objectives of the study were:

1. To compare body measurements of women age 18-35 with body measurements of women age 65 and over.
2. To compare body measurements of women age 65 and over and body measurements of women age 18-35 with body measurements listed in PS 42-70.

Limitations

Limitations of the study were:

1. The participants were limited to Caucasian women who were ambulatory and who did not live in a permanent care facility.
2. The participants were limited to those women who consented to be measured and who met the age criterion for one of the two groups.

Hypotheses

The hypotheses tested in the study were:

1. There are no significant differences between measurements of women age 65 and over and women age 18-35 in the following areas: full bust, waist, abdominal extension, hip, upper arm, wrist, shoulder length, neck-to-bust point, front waist length, cross-chest width, back waist length and cross-back width.
2. There are no significant differences between measurements of women age 65 and over and PS 42-70 (U. S. Department of Commerce, 1971) measurements in the following areas: full bust, waist, abdominal extension, hip, upper arm, wrist, shoulder length, neck-to-bust point, front waist length, cross-chest width, back waist length and cross-back width.
3. There are no significant differences between measurements of women age 18-35 and PS 42-70 measurements in the following areas: full bust, waist, abdominal extension, hip, upper arm, wrist, shoulder length, neck-to-bust point, front waist length, cross-chest width, back waist length and cross-back width.

Definition of Terms

The following definitions of terms were used in the study:

Dowager's Hump--The pad of fat at the base of the neck in the back of a person's body.

Ease--The difference between the body measurement and the garment measurement to provide for comfort and mobility.

Fit--The manner in which clothing conforms to the body of the wearer.

Half-Sizes--Graduated garment measures from 12½ to 26½ for women who are 5 feet 4 inches or less (U. S. Department of Commerce, 1971)

and who have a "high . . . waistline and full, low bust" (Brinkley and Aletti, 1976, p. 135).

Misses Sizes--Graduated garment measures from 6 to 22 for women between 5 feet 2½ inches and 5 feet 6½ inches tall (U. S. Department of Commerce, 1971) and who are of "average figure proportions" (Brinkley and Aletti, 1976, p. 135).

Ready-to-wear--Clothing manufactured in the garment industry.

Women's Sizes--Graduated garment measures from 34 to 52 for women who are from 5 feet 4½ inches to 5 feet 6½ inches tall (U. S. Department of Commerce, 1971) and who have a "mature, heavier proportioned figure with a full bust and long waistline" (Brinkley and Aletti, 1976, p. 135).

Specific descriptions of each measurement taken were given in Chapter III.

CHAPTER II

REVIEW OF LITERATURE

Well designed clothing that fits the wearer not only provides comfort but contributes to a feeling of self-worth. Older women have often reported that ready-to-wear garments do not fit properly. They have indicated that well fitting garments are hard to find and that there is little consistency in fit from one garment brand to another. In regard to these problems four major areas were presented and discussed in the review of literature: aging process, fit of ready-to-wear, need for standard sizes and marketing approaches.

Aging Process

Although there is no universal agreement as to when old age begins the age of 65 has traditionally been regarded by many as the beginning of old age in the United States. This came about, primarily, as a result of the passage of the social security laws in 1935. State and local governments as well as most companies, today, retire their employees at age 65 (Barrow and Smith, 1979).

Biological aging must be considered in any attempt to determine who is old. The process of biological decline begins in young adulthood and gradually continues throughout life. Individuals, however, vary in the speed and extent to which they age. In addition, not all body organs age at the same rate (Barrow and Smith, 1979).

Many changes occur during the later period of life which may require older people to make psychological adjustments. Havighurst (1952) described several changes that may occur: (1) loss of physical attractiveness, (2) loss of status, (3) loss of useful and respected roles and (4) a lessening of physical health and vigor. He suggested personal care as one defense against the changes of aging. According to Havighurst (1952, p. 16), "Older people should dress more carefully than younger ones, because they can thereby make better use of their physical attractiveness."

Barrow and Smith (1979, p. 20) indicated that the self-concept with its dimensions of "identity, body image and self-esteem" plays a large part in the process of aging. A positive self-concept is advantageous to a more rapid adjustment for the aged. Attractive clothing that fits properly can contribute to a positive self-concept.

Health

A large number of older people enjoy good health. Only about one-fourth of the population over 65 are limited by some chronic condition, according to Havighurst (1974). Physical impairments, such as partial loss of hearing or eyesight, affect the 65 to 74 age group to some extent but are more prevalent with the over 75 age group.

Arthritis, a disease resulting from inflammation of the joints, has long been associated with aging. Although people of other age groups experience the disease, it occurs widely among the aged in different forms. Osteoarthritis, one of the more common forms, may be experienced to some extent by over 95 percent of the aged. Pain, stiffness and tenderness may occur in the fingers and weight bearing

joints of the knees, hips and spine. Some older people may also suffer from rheumatoid arthritis which is one of the most crippling forms. Mild or severe cases of the disease can be experienced. Osteoporosis, another form of arthritis, causes a loss of bone mass in many aged people resulting in a decreased height and slumped posture (Barrow and Smith, 1979).

Bratcher (1975) conducted interviews with 100 women age 65 and over and found that health problems affected older women's preferences for certain types of garments. Those women who had arthritis indicated that they needed extra warmth in the particular areas affected. Garments with front closures were preferred by those who had arthritis in the shoulders and for those with emphysema and heart trouble.

Figure Changes

A variety of figure changes occur as women grow older. Blair (1953) investigated a number of figure changes that women recognize as they age. Questionnaires from 361 women age 45 to 65 indicated that the following changes were acknowledged: increased weight, increased waist circumference, heavier upper arms, sagging bust, rounded shoulders and dowager's hump. Blair concluded that the problem of increased weight and increased girth noted by the majority of women in the study created a difficulty in the use of clothing.

Tate and Glisson (1961) discussed other changes that occur as women age. A shifting of body fat causes thinner arms and legs, a double chin, increased neck size and enlarged abdomen and hips. The loss of insulating fat from arms and legs and a concurrent problem of poor blood circulation results in increased sensitivity to heat and cold in many older people.

Hoffman (1970) described other characteristics of aging women. Among them are dry, thin skin which is easily irritated by rough textured fabrics and a small decrease in height that probably results in a large number of women requiring half-sizes.

Some older women become thin with age, but "obesity is a much greater problem," according to Hoffman (1970, p. 293). Weight usually increases from middle age until about seventy when it may decrease (Ryan, 1966).

Fit of Ready-to-Wear

One of the basic elements of an attractive appearance is a properly fitting garment. According to Bishop and Arch (1962, p. 18), "Even the most expensive clothes can never have a quality look unless they fit well." Studies conducted by Walker (1972), Watson (1965), Hargett (1963) and Ebeling (1961) indicated that older women considered fit to be one of the most important criteria in the selection of ready-to-wear.

Ladies' ready-to-wear fashions are manufactured in several different size ranges in an attempt to fit many shapes and sizes. The most common size classifications of ready-to-wear are: misses, juniors, half-sizes, women's sizes, petite misses, tall misses and petite juniors (Brinkley and Aletti, 1976). Nevertheless, size designations do not necessarily signify the same garment measurements with different manufacturers. Women often wear smaller sizes in higher priced garments (Kefgen and Touchie-Specht, 1971).

Clothing that fits properly affects the wearer physically, psychologically and socially. Garments that fit well provide the body with

physical comfort. Bishop and Arch (1962, p. 18) stated, "Comfort and freedom are highlights of today's fashion compared to the past."

Individuals can have more self-confidence and feel at ease in social situations knowing that the wearing apparel correctly fits the body. Clothing that fits can be an asset in looking slimmer. "Good fit sets one apart from the crowd," according to Minott (1978, p. 2).

Whether a garment fits properly is not always easily determined. Minott (1978) identified four factors that indicate a well-fitted garment:

Clothes that fit well are smooth on the body yet loose enough to hang easily. The darts aim toward the fullest part of the body curves. Shoulder seamlines lie on top of and in the middle of the shoulder. Side seamlines hang perpendicular to the floor (p. 3).

Erwin and Kinchen (1974) identified five factors which characterize a well-fitted garment:

1. Grain. The lengthwise threads should be perpendicular to the floor and the crosswise threads should be parallel to the floor.
2. Set. The garment should lie smoothly against the body free of undesirable wrinkles.
3. Line. The basic seamlines should follow the natural lines of the body.
4. Balance. The garment falls at the same distance from one side of the body to another.
5. Ease. The garment is neither too tight nor too loose but appears to be comfortable on the individual.

The style of a garment also affects fit. Musheno (1973) listed four basic shapes which are used by the designer to create an endless variety of patterns. Fitted apparel follows the body form, touching

but not constricting it. Semi-fitted dresses fit smoothly in the bust area but fall lightly over the waist and hips. Slightly-fitted dresses have a larger amount of ease and simply follow the body contour.

Loosely-fitted garments have a large amount of ease above the bust and fall freely around the body. Another determinant of apparel fit is the intended use of the dress (Kefgen and Touchie-Specht, 1971). Many lounge garments have more added fullness than daytime dresses, for example.

Individuals may have different preferences for tightness or looseness of fit for various reasons. Bratcher (1975) noted that some older women have preferences for looser fitting garments because of specific health problems. For example, those in the Bratcher study who had cancer of the colon needed clothing that was loose through the waist and hip areas. Hay fever and asthma caused one woman to avoid garments with high and close fitting necklines.

The Need for Standard Sizes

The need for standard sizes among different manufacturers was noted as far back as the 1920's (Nystrom, 1928). He found that a size 36 blouse in different brands had a large variation of measurements. Nystrom also observed that there was more variation among garment measurements in the larger sizes.

Nystrom recognized several problems that occur without the use of a standard sizing system. Consumer dissatisfaction with ill-fitting garments, and retailer expense involved in alteration departments and markdowns were listed as difficulties. Nystrom (1928) cited "skimp cutting" by manufacturers as a means of lowering production costs.

In 1930 the need for an improvement in ready-to-wear sizing was emphasized by O'Brien (1930). According to O'Brien the measurements used at that time were developed mostly by trial-and-error through complaints received by manufacturers. The old concepts of ideal body proportions developed by early Greek artists and sculptors were still relied upon by the garment industry. O'Brien discussed the need for an anthropometric study which would be representative of the population of women in the United States. During 1939 and 1940 such a study was conducted by O'Brien (1941) as Chief of the Bureau of Home Economics. The purpose of the research was to provide information for "improving the fit of women's ready-to-wear and commercial patterns" (O'Brien, 1941, p. 1). Weight and 58 measurements of 10,042 women living in the United States were made and analyzed in the study. Of the total number of women measured 175 were age 65 and over. O'Brien indicated that aging may bring one or more of the following changes in the figures of women 55 years of age or over:

1. Waistline increases more than seven inches.
2. Abdominal extension increases more than seven inches.
3. Hips increase more than three and one-half inches.
4. Height of bust (from floor) declines more than two inches.
5. Height measurements decrease while girths increase as women grow older.

In 1958 the U. S. Department of Commerce, National Bureau of Standards published a document on body measurements for the sizing of women's patterns and apparel. Research for the publication was undertaken at the request of the Mail Order Association. Some of the purposes of the study were:

(1) To provide standard classifications, size designations and body measurements for consistent sizing of women's ready-to-wear apparel . . . (2) to provide the consumer with a means of identifying her body type and size . . . (3) to enable her to be fitted properly by the same size regardless of price, type of apparel or manufacturer of the garment (U. S. Department of Commerce, 1958, p. 1).

The information in the study was based on a further analysis of the measurements from O'Brien's (1941) anthropometric study. Although garment standards were badly needed at this time, acceptance of the standard by the producer was entirely voluntary. Producers who accepted the standard were also allowed to deviate from the standard when they deemed it necessary as is true with today's standard.

In 1968 the Mail Order Association requested a revision of the 1958 standard "to more accurately reflect the current population of women" (U. S. Department of Commerce, 1971, p. 14). The new edition was merely a revision of the old anthropometric data rather than a new study. It included height variations of junior petite, misses petite and misses tall. An appendix was also added which included span charts and grading guides for each size classification. In addition, measurements for sitting spread height, sitting height and front crotch length were omitted and a mid-neck measurement was included. The new edition of the standard, Voluntary Product Standard PS 42-70, went into effect on December 22, 1970.

In 1975 Frazier noted that no anthropometric study had been done since the O'Brien study. She examined the sizing of ready-to-wear clothing for older women. A questionnaire was administered to 55 women age 62 and over to determine age and dress size. The women were then measured and placed into size categories according to what dress size they purchased. Mean body measurements were compared to

ready-to-wear dress measurements and to the measurements listed in PS 42-70. A third comparison was also made between the measurements of the dresses and PS 42-70 measurements. Frazier found that the dresses were too small for the older women in neck-to-bust length and waist circumference. The body measurements of the women did not closely correspond with Bureau of Standards measurements. Large differences were exhibited in the following areas: back waist length, neck-to-bust point and waist girth. The dresses examined were found to generally follow PS 42-70 (U. S. Department of Commerce, 1971) guidelines except in shoulder length. The shoulder length of the dresses was longer than the guidelines allowed.

According to a letter from Feltzer (Appendix A), the Mail Order Association proposed a revision of PS 42-70 in 1978. The new standard showed larger girth measurements than PS 42-70 for the waist, abdominal extension and hip as well as an increased weight for each size in the misses category. This standard was never formally distributed but is the standard that Mail Order Association presently uses.

Felkner (1978) compared selected body measurements of 99 women over age 65 to the same measurements listed in PS 42-70. Nine measurements were taken over the outer clothing and adjusted to compensate for the clothing. Measurements of each woman were compared to the standard measurements for the size that the woman said she most often purchased. The women were found to be larger than the PS 42-70 in eight measurements: full bust, waist, high hip, hip, cross-chest width, neck-to-bust point, cross-back width and back waist length.

Marketing Approaches

The marketplace has been slow in responding to the needs of those who are 65 and over. Shipley (1961) questioned 148 women age 55 and over and 24 buyers in selected retail stores. Older women's clothing interest and preferences were compared with the clothing selection available in the retail market. A relatively low percentage of stock was considered to be appropriate for these women. The majority of the buyers planned little emphasis or advertising on clothing for older women and on the whole, held a more conservative view of what older women would wear than actual preferences of the women.

Allan (1981) also noted that products or marketing approaches were not meeting the needs of older people. Fashion design for older people was identified as an area that deserved more attention.

Incomes of many older people are lower than those of younger families; however, older people still make up a large share of the market for the same basic needs. In 1971 the market for the 65 and over group was estimated at 60 billion dollars (The Power of the Aging, 1971). Undoubtedly, this age group has increased its market share in 10 years with the 65 and over age group making up a larger proportion of the population. This may result in a shift of emphasis in marketing strategy.

In considering a need for better proportioned garments for older women many questions arise as to the procedure to follow in marketing such garments. Women in the Bader (1963) study pointed out their feelings on a store department for older women. Approximately as many women approved such a department as opposed it. Those who opposed the department expressed fears that the clothing selection would contain

uninteresting designs and colors.

Hoffman (1970) proposed a method of reaching the older market. She suggested a special size range to accommodate the figure changes of older women with a name that would not be associated with age.

Summary

The increasing number of people age 65 and over have many needs that are common to other age groups and at the same time are unique. Attention to clothing and personal appearance can help older women maintain a sense of worth and self-respect in later years.

Changes in health and physical appearance may occur as women age. Although many older women experience relatively good health, more problems with arthritis and physical impairments occur during this period of life than in younger years. A general downward shift of body fat takes place to create body proportions different from those of younger women.

Research supports the fact that the consideration of fit is an important factor in the selection of ready-to-wear. Even though a variety of sizes are available many older women have fitting problems and need alterations.

Judging proper fit of garments is often difficult. The way a particular garment conforms to the body is only one determining factor. Fit is also influenced by garment style, intended use of garment and individual preferences.

The need for standardization of sizing in ready-to-wear has been observed by many people. Although a guideline for the sizing of apparel exists, variation occurs within one size among manufacturers.

Older women whose figures have changed with the process of aging find it difficult to find garments of consistent size and proportions to fit their figures.

The garment industry and retail market have responded slowly to the clothing needs of older women. Special store departments and size ranges for aged women have been proposed by educators as possible solutions.

CHAPTER III

METHOD AND PROCEDURE

The purpose of the study was to analyze the relationships among body measurements of two age groups of women and compare them with the measurements listed in Voluntary Product Standard PS 42-70 (U. S. Department of Commerce, 1971). This section includes the following topics: (1) preliminary procedure, (2) selection of participants, (3) measurement of participants and (4) method of data analysis.

Preliminary Procedure

The researcher was instructed in the proper method of taking measurements by a clothing and textiles instructor at Oklahoma State University. A trial set of measurements of four graduate students was made by the researcher and checked against measurements made by the instructor. A decision was made to place individuals into a size category using the high bust measurement. Research by Seifert, Strickland, Buman and Hollen (1972) showed that the high bust measurement was more accurate for determining size than full bust measurement.

Selection of Participants

Many women were contacted in an attempt to identify at least 30 Caucasian women who were 65 years of age or over and who wore the same

size. A total of 85 were measured before 30 were found in the same size category. These 30 women all wore a misses size 12.

In finding volunteers for the study a list of possible subjects in the Stillwater area was first compiled with the aid of faculty members. The purpose of the study was explained to prospective subjects by phone, and they were asked if they would be willing to be measured while wearing only undergarments in their own home or in a meeting place of their choice. Twenty-four of these women consented to be measured. With the aid of Cooperative Extension Home Economists in Payne and four surrounding counties 27 members of Extension Homemakers Clubs were found who met the criteria for age and dress size and who were willing to be measured. Thirty-four more women volunteered to participate after an announcement was made at the 1982 Oklahoma Extension Homemakers Council Meeting and at the 1982 OSU Days for Families.

Various groups were contacted on the university campus and in the Stillwater area in an effort to identify 30 Caucasian women in the 18-35 age range who wore a misses size 12. A total of 104 women were measured before 30 could be classified as a misses size 12 according to high bust measurement. The purpose of the study was explained to home economics classes at Oklahoma State University during the summer and fall of 1982 and 56 students volunteered to participate. Thirty women were measured who were members or friends of members of a local church group in Stillwater. Resident assistants from one dormitory on campus were helpful in finding 16 participants for the study. Two women agreed to participate after being contacted through a campus sorority.

Measurements of Subjects

All subjects from each group of 30 women were measured while wearing only the undergarments normally worn with street dresses. All women in both age groups wore a brassiere with over-the-shoulder straps. Three women age 65 and over wore girdles, but none of the women age 18-35 wore girdles at the time of measurement.

Body measurements for each participant were made using a fiberglass one-half inch wide measuring tape marked in sixteenths of an inch. A neck chain was placed around each subject's neck to locate the neck base. The natural waistline of each participant was located by tying a one-half inch wide piece of elastic around the body below the rib cage. The elastic also served as a guide for measuring back waist length.

Areas of the body chosen to be measured were based on most often reported problem areas in the fit of clothing for older women as discussed in the review of literature. Following is a description of body areas that were measured.

High bust girth -- distance around body at same level across back as full bust measurement but higher in front. If fat pads exist it should be taken below these at the side of the body (Minott, 1978).

Full bust girth -- distance around the body at the level of maximum bust girth (U. S. Department of Commerce, 1971).

Waist girth -- distance around the body at the natural waistline. (U. S. Department of Commerce, 1971).

Abdominal extension girth -- distance around body at the level of the greatest prominence of the abdomen when viewed from the side of the body (U. S. Department of Commerce, 1971).

Hip girth -- distance around the body at hip level, the outer bony prominence of the upper end of the femur (U. S. Department of Commerce, 1971).

Upper arm girth -- distance around arm with arm down and upper edge of tape level with bottom of armscye (U. S. Department of Commerce, 1971).

Wrist girth -- distance around arm over the prominence at the lower end of the ulna, the inner of the two bones of the forearm (U. S. Department of Commerce, 1971).

Shoulder length -- distance from the base of the neck to the armscye line corresponding to the usual garment shoulder line (U. S. Department of Commerce, 1971).

Neck-to-bust point -- the length from the point where the shoulder intersects the base of the neck to the point of the bust (U. S. Department of Commerce, 1971).

Front waist length -- distance from the center front of the neck base circumference line to the waist level (U. S. Department of Commerce, 1971).

Cross-chest width -- distance across front of chest from one armscye to the other at midpoint between shoulder and bottom of armscye (U. S. Department of Commerce, 1971).

Back waist length -- vertical distance along the spine from the lowest cervical vertebra to the waistline (U. S. Department of Commerce, 1971).

Cross-back width -- distance across back from one armscye to the other at midpoint between shoulder and bottom of armscye (U. S. Department of Commerce, 1971).

Method of Data Analysis

Statistical procedures were used to compare the body measurements of women age 65 and over with body measurements of women age 18-35. Range, means and standard deviations for each of the 12 measurements for the two groups of women were calculated. Differences in the means of each age group for each measurement were tested by a two-sample t test ($p < .05$). Multivariate analysis of variance was used to test for significant difference in body measurements between the two age groups considering all 12 variables at once. Correlation coefficients were calculated for combinations of measurements within each age group. A factor analysis was run to further determine whether a significant difference ($p < .05$) in body shape existed between the two groups.

The differences between the measurements of the women and the corresponding measurements listed in PS 42-70 (U. S. Department of Commerce, 1971) were determined. A one-sample t test was used to compare the mean differences for each of the two groups with the PS 42-70 measurements ($p < .05$).

CHAPTER IV

ANALYSIS OF DATA

The study was conducted for the purpose of analyzing the relationships among body measurements of two groups of women and comparing them with the measurements listed in Voluntary Product Standard PS 42-70 (U. S. Department of Commerce, 1971). Body measurements of 30 Caucasian women age 65 and over who wore a misses size 12 and 30 Caucasian women age 18-35 who also wore a misses size 12 were analyzed.

Comparison of Body Measurements

Individual measurements for the 60 women in the study may be found in Tables VI and VII in Appendices C and D. The ranges, means and standard deviations of the measurements for the two groups of women are listed in Table I. The means of the age 65 and over age group were one-half inch or more larger than the 18-35 group in the following areas: full bust, waist, abdominal extension and neck-to-bust point. Mean measurements for the women in the 18-35 age group were more than one-half inch larger than the 65 and over age group for hip and front waist length.

A two-sample t test was used to test for differences between the mean measurements of the 18-35 age group and the corresponding measurements from the 65 and over age group. The results are shown in Table II.

TABLE I
RANGES, MEANS AND STANDARD DEVIATIONS FOR BODY MEASUREMENTS^a OF PARTICIPANTS
(N=30 For Each Group)

Variable	65 and Over Age Group			18-35 Age Group		
	Range	Mean	Standard Deviation	Range	Mean	Standard Deviation
Full bust	35.00-39.88	37.18	1.14	34.50-38.38	36.40	1.06
Waist	28.00-34.25	30.56	1.67	27.13-31.75	28.65	1.10
Abdominal extension	35.00-41.50	37.93	1.50	33.00-41.50	36.16	1.71
Hip	34.13-42.38	38.19	1.80	36.63-42.25	39.28	1.76
Upper arm	10.00-12.13	11.39	0.51	11.00-13.00	11.78	0.59
Wrist	5.50- 6.63	6.06	0.34	5.63- 6.50	6.01	0.19
Shoulder length	3.50- 5.94	4.43	0.42	3.75- 5.25	4.38	0.43
Neck-to-bust point	9.75-12.63	11.26	0.73	9.75-12.00	10.72	0.55
Front waist length	11.38-15.00	13.57	0.92	13.25-16.25	14.48	0.90
Cross-chest width	10.88-14.00	12.88	0.84	11.50-13.88	12.55	0.67
Back waist length	14.25-17.88	15.56	0.85	14.63-17.50	15.92	0.79
Cross-back width	13.13-16.63	14.45	0.76	12.75-15.63	14.28	0.70

^aAll measurements are given in inches.

TABLE II
COMPARISON OF BODY MEASUREMENTS^a BETWEEN
TWO AGE GROUPS OF WOMEN
(N=30 For Each Group)

Variable	65 and Over	18-35 Age	t Statistic ^b
	<u>Age Group</u> Mean	<u>Group</u> Mean	
Full Bust	37.18	36.40	2.74**
Waist	30.56	28.65	5.23**
Abdominal Extension	37.93	36.16	4.25**
Hip	38.19	39.28	2.36*
Upper Arm	11.39	11.78	2.71**
Wrist	6.06	6.01	0.76
Shoulder Length	4.43	4.38	0.52
Neck-to-Bust Point	11.26	10.72	3.21**
Front Waist Length	13.57	14.48	3.89**
Cross-Chest Width	12.88	12.55	1.67
Back Waist Length	15.56	15.92	1.71
Cross-Back Width	14.45	14.28	0.90

^aAll measurements are given in inches.

^bdf=1,58

*Significant at the .05 level.

**Significant at the .01 level.

The mean measurements of the 65 and over age group were significantly different from those of the 18-35 age group in the following areas: full bust, waist, abdominal extension, hip, upper arm, neck-to-bust point and front waist length. The mean measurements of the 65 and over age group were larger in full bust, waist, abdominal extension and neck-to-bust point. The 18-35 age group were larger in the hip, upper arm and front waist length mean measurements.

Correlation coefficients were calculated for each of 66 combinations of measurements within each age group (see Tables III and IV). Significant correlations were found in the 65 and over group for the following: waist with full bust, waist and hip with abdominal extension, upper arm with abdominal extension and hip, shoulder length with abdominal extension and wrist, neck-to-bust point with full bust, front waist length with full bust and neck-to-bust point, cross-chest width with hip and front waist length, cross-back width with back waist length and neck-to-bust point. Significant correlations were found in the 18-35 group for the following: waist with full bust, abdominal extension with full bust and waist, hip with waist and abdominal extension, shoulder length with wrist, front waist length with abdominal extension and neck-to-bust point, back waist length with front waist, cross-back width with wrist and shoulder length.

A multivariate analysis of variance was run to compare measurements of the two age groups considering all 12 variables at once (Morrison, 1967). The Hotelling-Lawley Trace Criterion was 3.41 which was highly significant ($p < .0001$). This indicated that there was a difference in body measurements between the two groups when all 12 variables were considered together. Therefore, strong evidence was

TABLE III
CORRELATION COEFFICIENTS FOR BODY MEASUREMENTS
WITHIN THE 65 AND OVER AGE GROUP
(N=30)

Variable	Full Bust	Waist	Abdominal Extension	Hip	Upper Arm	Wrist	Shoulder Length	Neck-to- Bust Point	Front Waist	Cross Chest	Back Waist
Waist	.42*										
Abdominal Extension	.25	.66**									
Hip	-.01	.09	.47**								
Upper Arm	.15	.24	.40*	.45**							
Wrist	.05	.18	.34	.29	.31						
Shoulder Length	-.01	.23	.38*	.26	-.05	.43*					
Neck-to-Bust Point	.56**	.15	-.01	.07	-.26	-.04	.18				
Front Waist Length	.49**	.31	.27	.10	.18	.08	.08	.39*			
Cross-Chest Width	-.02	.05	.27	.39*	.26	.28	.26	.06	.38*		
Back Waist Length	-.16	-.15	-.14	.07	-.32	-.11	.24	.34	-.16	-.08	
Cross-Back Width	.15	-.06	-.26	-.22	-.13	.10	.22	.37*	.05	-.07	.48**

*Significant at the .05 level.

**Significant at the .01 level.

TABLE IV
CORRELATION COEFFICIENTS FOR BODY MEASUREMENTS
WITHIN THE 18-35 AGE GROUP
(N=30)

Variable	Full Bust	Waist	Abdominal Extension	Hip	Upper Arm	Wrist	Shoulder Length	Neck-to- Bust Point	Front Waist	Cross Chest	Back Waist
Waist	.52**										
Abdominal Extension	.41*	.79**									
Hip	.09	.47**	.67**								
Upper Arm	.19	.34	.33	.30							
Wrist	-.06	-.10	.02	.03	.26						
Shoulder Length	-.08	-.03	.23	.09	.11	.40*					
Neck-to-Bust Point	.25	.16	.00	.22	-.05	.08	.17				
Front Waist Length	.15	.33	.36*	.14	.07	.26	.27	.39*			
Cross-Chest Width	.26	.22	.12	.20	.34	-.05	-.15	.14	.22		
Back Waist Length	-.05	.25	.30	.34	-.08	.02	.03	.35	.71**	.32	
Cross-Back Width	.08	.07	.13	.01	-.09	.40*	.40*	.21	.30	-.25	.10

*Significant at the .05 level.

**Significant at the .01 level.

provided for rejecting the first hypothesis that there is no significant difference between measurements of women age 65 and over and women age 18-35.

A factor analysis was used to determine whether a difference in shape existed between the 65 and over age group and the 18-35 age group (Kerlinger, 1973). A two-sample t test was then computed on the factor scores and was significant ($t=3.76$, $p<.0004$). This provided a positive test that a difference in shape existed. Therefore, the first hypothesis was rejected.

Women's Measurements and PS 42-70

The mean body measurements of each group were compared with the body measurements for a misses size 12 in PS 42-70 (U. S. Department of Commerce, 1971). The mean differences for each measurement in the two groups are listed in Table V. The means for the 65 and over age group were larger than the measurements listed in PS 42-70 and the difference was significant ($p<.01$) in all areas except shoulder length, front waist length and back waist length. Waist and abdominal extension were more than four inches larger than the corresponding measurements in PS 42-70. Therefore the null hypothesis was rejected. There was a significant difference between measurements of women age 65 and over and PS 42-70 measurements in the following areas: full bust, waist, abdominal extension, hip, upper arm, wrist, neck-to-bust point, cross-chest width and cross-back width.

The mean body measurements of the 18-35 age group were larger than PS 42-70 and the difference was significant ($p<.01$) for 10 of 12 measurements; shoulder length and cross-chest width were the only two

TABLE V
MEAN DIFFERENCES^a IN BODY MEASUREMENTS
AND PS 42-70

Variable	Age 65 and Over Group (N=30)		Age 18-35 Group (N=30)	
	Mean Difference	t Statistic ^b	Mean Difference	t Statistic ^b
Full Bust	2.18	10.45*	1.40	7.20*
Waist	4.56	14.93*	2.65	13.18*
Abdominal Extension	4.80	17.47*	3.03	9.68*
Hip	1.19	3.62*	2.28	7.09*
Upper Arm	0.89	9.56*	1.28	11.80*
Wrist	0.43	6.85*	0.38	11.00*
Shoulder Length	0.05	0.68	0.00 ^c	-0.05
Neck-to-Bust Point	1.88	14.02*	1.34	13.21*
Front Waist Length	0.07	0.39	0.98	5.97*
Cross-Chest Width	0.50	3.25*	0.17	1.40
Back Waist Length	0.06	0.39	0.42	2.92*
Cross-Back Width	1.57	11.26*	1.40	10.88*

^aAll measurements are given in inches.

^bdf=1,29

^cEquals 0 due to rounding.

*Significant at .01 level.

measurements in which no significant difference existed. Therefore, the null hypothesis was rejected. There was a significant difference between measurements of women age 18-35 and PS 42-70 measurements in the following areas: full bust, waist, abdominal extension, hip, upper arm, wrist, neck-to-bust point, front waist length, back waist length and cross-back width.

Discussion of Findings

Results from the study indicated that the measurements of the 65 and over age group were significantly different from those of the 18-35 age group in the following areas: full bust, waist, abdominal extension and neck-to-bust point; the mean measurements of the 65 and over age group were larger in all of these areas. This supported research by Blair (1953) who found that the bust level drops and the waist circumference increases with age. The fact that the measurements for waist, abdominal extension and neck-to-bust point were larger for the 65 and over group substantiates O'Brien's (1941) findings that these measurements generally increase with age. However, O'Brien indicated a larger increase for each measurement than was found in this study.

The study showed that the measurements of the 65 and over age group were significantly different from the 18-35 age group for hip and upper arm measurements; these measurements were smaller for the 65 and over age group. This contradicts findings of O'Brien (1941) who indicated that these measurements should increase with age.

Significant correlations existed for both age groups for the following girth measurements: full bust with waist, abdominal

extension with waist, and hip with abdominal extension. The 65 and over group showed additional correlations for girth measurements of abdominal extension with upper arm ($p < .05$) and hip with upper arm ($p < .01$). Significant correlations of girth measurements also existed in the 18-35 age group for abdominal extension with full bust ($p < .05$) and hip with waist ($p < .01$).

The body measurements of the 65 and over age group were compared with the measurements for a misses size 12 in PS 42-70 (U. S. Department of Commerce, 1971). The means were significantly different from the measurements in PS 42-70 for the following areas: full bust, waist, abdominal extension, hip, upper arm, wrist, neck-to-bust point, cross-chest width and cross-back width. These means were all larger than PS 42-70 measurements. These findings strengthen the results of Frazier's (1975) study which showed differences between mean body measurements and PS 42-70 measurements in the areas of neck-to-bust point, waist and abdominal extension. In the Frazier study, however, large differences between mean body measurements and PS 42-70 measurements also existed for front waist length and back waist length that were not revealed in this study.

Felkner (1978) also compared mean body measurements of women over 65 to PS 42-70 measurements. Of nine measurements taken differences in the following were significant: full bust, waist, high hip (abdominal extension), hip, cross-chest width, neck-to-bust point, cross-back width and back waist length. Results of the current study confirmed these findings; however, in the current study no difference existed between the mean for older women's back waist length measurement and the corresponding PS 42-70 measurement.

The mean body measurements of women age 18-35 and women age 65 and over were significantly different from PS 42-70 measurements for the following areas: full bust, waist, abdominal extension, hip, upper arm, wrist, neck-to-bust point and cross-back width. In addition, a significant difference existed for the 18-35 age group and PS 42-70 (U. S. Department of Commerce, 1971) measurements for front waist length and back waist length. There was a significant difference for the 65 and over group in cross-chest width.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of the study was to analyze the relationships among body measurements of two age groups of women and compare them with the measurements listed in Voluntary Product Standard PS 42-70 (U. S. Department of Commerce, 1971). Data were collected by measuring Caucasian women in two age categories: age 65 and over and age 18-35. Women in the 65 and over group were Stillwater area residents, members of Oklahoma Extension Homemakers Clubs or participants in 1982 OSU Days for Families. Women in the 18-35 age group were students at Oklahoma State University during the summer and fall of 1982 or were associated with a local church group in Stillwater.

The measurements of 30 women age 65 and over were compared to the measurements of 30 women age 18-35. Based on the high bust measurement all women wore a misses size 12. The measurements selected as variables in the study were: full bust, waist, abdominal extension, hip, upper arm, wrist, shoulder length, neck-to-bust point, front waist length, cross-chest width, back waist length and cross-back width. The analysis of data indicated a significant difference between the measurements of women in the two groups in the following areas: full bust, waist, abdominal extension, hip, upper arm, neck-to-bust point and front waist length. Further analysis of the data revealed a significant difference in body measurements between the two groups

considering all 12 variables at once. From a factor analysis it was determined that a significant difference in body shape existed between the two groups.

Body measurements of women in the two age groups were also compared to the measurements listed in PS 42-70. The mean measurements of both groups were larger than PS 42-70 measurements in the following areas: full bust, waist, abdominal extension, hip, upper arm, wrist, neck-to-bust point, and cross-back width. In addition, the 65 and older group was larger in the cross-chest width measurement and the 18-35 group was larger in the front waist length and back waist length measurements.

Conclusions

The null hypothesis that there is no significant difference between measurements of women age 65 and over and women age 18-35 was rejected for all areas except wrist, shoulder length, cross-chest width, back waist length and cross-back width. In areas where significant differences existed between measurements of the two age groups the 65 and over age group was larger in all except hip and upper arm. In some areas the mean difference was as large as 1.5 inches. There was also a significant difference ($p < .0001$) in mean body measurements of the two groups when all 12 variables were considered. In addition, the shape of the 65 and over age group was found to be significantly different ($p < .0004$) from the shape of the 18-35 age group.

The null hypothesis that there is no significant difference between measurements of women age 65 and over and PS 42-70 measurements

was rejected for all areas except shoulder length, front waist length and back waist length. The null hypothesis that there is no significant difference between measurements of women age 18-35 and PS 42-70 measurements was rejected for all areas except shoulder length and cross-chest width. Mean body measurements of both age groups were larger than PS 42-70 measurements for all areas where there was a significant difference.

Recommendations

Recommendations for further study are the following:

1. Repeat the study comparing standard measurements used by pattern companies with body measurements of the two age groups in this study.
2. Compare the body measurements of other ethnic groups with each other and with the measurements listed in PS 42-70.
3. Conduct a study of the satisfaction of women age 65 and over with the selection of ready-to-wear clothing that is available in the marketplace.
4. Investigate the interpretation of preferred fit of ready-to-wear garments for older women.
5. Determine how clothing and physical appearance is interrelated with the self-concept of older women.
6. Investigate the use of the high bust measurement and selected other measurements in accurately determining appropriate size.

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APPENDICES

APPENDIX A

LETTER FROM MICHAEL FELTSER

MAIL ORDER ASSOCIATION OF AMERICA
Headquarters:
1931 N. Meacham Rd., Suite 344
Schaumburg, IL 60195
(312) 397-1710

Sizing Subcommittee Address
c/o J. C. Penney Company, Inc.
1301 Avenue of the Americas
New York, NY 10019
ATTENTION: Michael Feltser,
Chairman - 13th Floor

August 4, 1982

Ms. Angela Lunn
222 North Duck, Apt. 327
Stillwater, Oklahoma 74074

Dear Ms. Lunn:

With reference to your letter of July 26, 1982 to the M.O.A.A.
concerning women's body measurements.

Enclosed is an update of PS 42-70 dated 1978. Please note it is a
Proposed Standard for Females, from childhood to adult. It was never
officially circulated because the National Bureau of Standards no
longer publishes these standards, however it is the standard currently
used by the M.O.A.A.

In studying TS 221, you will find differences from the old standard;
additionally garments are cut with ease or "oversize" above actual
body measurements according to style and taste.

With regard to waist length, it should be noted that the waistline
position quoted in the standard is located at the edge of the lower
floating ribs, which is somewhat higher than the actual "natural"
waistline where garments normally fit.

I trust this information is of use in your endeavor.

Yours truly,

(Signed)

Michael Feltser

Encl.

APPENDIX B

VOLUNTARY PRODUCT STANDARD PS 42-70

FOR SELECTED MEASUREMENTS IN

MISSES SIZE 12

VOLUNTARY PRODUCT STANDARD PS 42-70 FOR
SELECTED MEASUREMENTS^a IN
MISSES SIZE 12

Full bust	35.00
Waist	26.00
Abdominal extension	33.13
Hip	37.00
Upper arm	10.50
Wrist	5.63
Shoulder length	4.38
Neck-to-bust point	9.38
Front waist length	13.50
Cross-chest width	12.38
Back waist length	15.50
Cross-back width	12.88

^aAll measurements are given in inches.

APPENDIX C

BODY MEASUREMENTS OF INDIVIDUAL PARTICIPANTS IN THE 18-35 AGE GROUP

TABLE VI
BODY MEASUREMENTS^a OF INDIVIDUAL PARTICIPANTS
IN THE 18-35 AGE GROUP

Variable	Participants														
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
High Bust	34.50	35.50	35.50	34.75	34.25	34.38	35.13	35.00	35.25	34.25	34.25	34.38	34.50	34.50	34.25
Full Bust	34.75	38.38	37.63	36.75	36.38	36.25	36.38	37.25	37.38	34.50	35.00	34.75	36.63	37.50	35.50
Waist	28.63	29.13	31.75	27.13	28.50	28.25	28.13	30.13	31.13	27.25	29.00	27.38	28.25	28.63	27.25
Abdominal Extension	35.00	35.13	41.50	34.75	35.50	37.38	36.50	37.25	38.88	33.00	35.00	34.75	37.00	34.25	34.25
Hip	39.38	37.13	42.25	37.63	36.75	40.25	40.00	39.25	41.75	36.63	38.00	41.88	41.75	37.75	38.00
Upper Arm	11.50	11.25	12.75	11.75	11.88	11.50	11.25	11.88	11.75	11.00	11.00	12.25	11.88	12.25	13.00
Wrist	6.00	5.63	5.75	6.13	6.00	6.13	5.75	5.88	6.00	6.13	5.75	6.13	6.00	6.00	6.00
Shoulder Length	3.88	3.81	4.38	4.31	3.75	4.56	4.19	4.31	4.25	4.38	3.81	4.00	4.13	3.81	4.31
Neck-to-Bust Point	10.75	10.75	9.88	10.50	10.25	10.38	11.00	12.00	10.88	10.75	10.25	10.88	10.63	11.00	10.38
Front Waist Length	13.38	14.00	15.38	13.38	14.00	14.00	14.50	16.25	15.50	15.13	13.38	15.75	14.63	14.25	13.88
Cross-Chest Width	12.00	13.13	13.75	13.38	12.75	12.00	12.13	13.25	13.38	12.75	11.50	13.88	12.25	12.25	13.00
Back Waist Length	15.75	15.00	17.00	15.00	15.50	16.00	15.75	17.13	16.75	16.63	15.50	17.25	16.75	16.00	14.75
Cross-Back Width	13.63	13.63	14.00	13.50	13.25	13.88	13.88	13.25	14.75	15.38	14.00	13.50	13.75	14.00	14.38

TABLE VI (Continued)

Variable	Participants														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
High Bust	34.38	34.88	34.50	35.25	34.25	35.75	35.00	34.25	34.63	35.25	34.63	35.38	34.25	34.25	35.25
Full Bust	36.38	34.63	36.63	36.38	35.38	37.63	35.75	35.25	37.75	37.50	37.50	36.50	37.13	36.50	36.00
Waist	27.63	27.75	28.00	28.50	29.13	30.13	29.00	27.63	28.25	28.25	29.25	29.50	29.50	28.00	28.50
Abdominal Extension	35.00	35.50	35.25	35.75	37.63	37.00	36.75	34.75	37.25	35.25	36.50	39.13	36.25	35.50	37.13
Hip	40.00	37.63	38.63	36.75	41.50	41.88	40.75	38.25	38.00	39.88	39.13	41.25	38.00	38.25	40.13
Upper Arm	11.00	11.00	11.50	12.25	11.63	12.75	11.88	12.25	11.25	11.13	12.25	12.88	12.00	11.38	11.25
Wrist	6.00	5.88	6.00	6.13	6.13	6.13	5.75	6.00	6.13	5.88	6.13	6.25	6.50	5.75	6.25
Shoulder Length	4.38	4.25	4.81	5.00	4.56	3.94	5.13	5.13	4.56	4.38	4.63	4.75	4.75	3.88	5.25
Neck-to-Bust Point	10.88	9.75	10.75	11.13	10.75	11.38	11.50	9.75	10.50	11.25	11.25	10.25	10.38	10.00	11.75
Front Waist Length	13.50	14.25	13.88	15.63	14.50	13.63	14.38	13.25	15.38	13.50	15.00	13.88	15.50	14.38	16.25
Cross-Chest Width	12.13	12.50	12.00	12.25	11.63	13.75	12.50	12.75	12.75	13.00	11.88	11.88	12.25	11.50	12.38
Back Waist Length	15.00	15.88	15.63	16.75	16.25	16.25	15.63	15.25	16.38	15.75	14.88	14.63	15.13	16.00	17.50
Cross-Back Width	14.38	14.38	15.13	15.13	14.25	14.63	14.25	12.75	14.75	14.75	14.63	15.25	15.00	14.63	15.63

^aAll measurements are given in inches.

APPENDIX D

BODY MEASUREMENTS OF INDIVIDUAL PARTICIPANTS
IN THE 65 AND OVER AGE GROUP

TABLE VII
BODY MEASUREMENTS^a OF INDIVIDUAL PARTICIPANTS
IN THE 65 AND OVER AGE GROUP

Variable	Participants														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
High Bust	34.50	34.50	35.38	34.50	34.50	34.50	35.13	34.38	34.50	34.50	35.25	35.00	35.00	35.50	34.50
Full Bust	36.88	35.00	37.88	37.88	38.50	36.13	37.50	38.13	35.88	36.75	36.13	35.75	36.88	37.00	37.50
Waist	32.88	30.88	31.00	30.88	30.88	28.25	32.75	29.50	29.63	30.13	29.25	28.75	32.50	30.63	28.00
Abdominal Extension	38.25	40.25	38.00	38.00	37.50	37.75	41.50	35.00	36.63	37.13	36.50	36.75	38.00	38.50	38.38
Hip	36.88	38.88	37.00	40.25	37.00	38.75	39.75	34.75	37.25	41.00	37.50	37.25	37.00	38.75	39.50
Upper Arm	11.00	10.88	11.88	10.75	12.00	11.00	11.63	10.00	11.75	11.38	11.25	11.50	11.50	11.88	11.13
Wrist	5.88	6.38	6.38	6.63	6.00	6.50	6.25	5.75	6.00	5.50	5.63	6.38	5.88	6.00	5.50
Shoulder Length	4.38	5.94	4.50	5.25	4.88	4.63	4.50	4.25	3.63	4.38	4.31	4.56	4.44	4.31	4.31
Neck-to-Bust Point	11.00	10.88	11.13	12.63	11.00	10.50	10.75	12.38	10.63	11.00	11.75	11.50	10.25	11.63	11.13
Front Waist Length	11.38	12.50	14.50	14.00	13.63	14.63	13.88	13.50	13.25	13.88	14.13	12.75	14.13	14.63	13.25
Cross-Chest Width	11.75	13.88	11.88	13.88	13.25	13.63	11.50	11.88	13.25	12.75	13.00	13.38	13.75	14.00	12.75
Back Waist Length	15.25	17.00	15.13	15.25	15.50	15.13	15.38	15.00	15.25	15.63	16.00	16.50	15.13	14.88	15.63
Cross-Back Width	14.00	14.50	14.63	14.75	14.88	14.00	13.50	15.00	14.00	13.13	13.88	14.88	14.75	14.25	13.75

TABLE VII (Continued)

Variable	Participants														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
High Bust	34.38	34.25	35.50	34.75	35.38	35.63	34.63	34.25	34.50	34.50	34.25	35.63	34.50	35.13	34.63
Full Bust	38.38	36.13	39.38	37.88	37.75	37.63	39.88	36.25	36.25	35.75	36.25	37.75	38.38	37.50	36.38
Waist	30.63	28.50	32.00	31.25	32.75	34.25	30.88	29.75	28.88	29.50	29.00	33.75	29.75	31.50	28.63
Abdominal Extension	37.38	37.75	38.50	38.38	38.75	41.38	39.63	38.25	37.63	35.88	35.38	39.00	37.25	38.38	36.13
Hip	36.25	40.50	38.75	39.50	39.38	39.13	38.50	39.38	36.88	38.13	34.13	36.00	37.00	42.38	38.38
Upper Arm	11.25	11.88	11.25	12.00	11.88	11.75	11.63	12.13	10.88	11.13	10.25	11.25	11.75	11.63	11.50
Wrist	6.00	6.00	6.50	6.50	6.00	6.38	6.00	6.63	5.63	6.38	5.50	5.75	6.13	5.88	5.88
Shoulder Length	4.19	4.25	4.25	4.38	4.75	4.50	4.63	4.38	3.50	4.38	4.25	4.31	4.31	4.38	4.25
Neck-to-Bust Point	11.38	11.38	12.38	10.88	11.38	11.38	12.63	9.75	10.25	11.00	11.50	11.38	11.50	12.50	10.25
Front Waist Length	14.75	13.75	14.25	13.88	14.38	15.00	14.25	11.63	12.13	12.63	13.13	14.13	13.25	13.25	12.50
Cross-Chest Width	13.00	13.38	13.38	13.75	13.38	14.00	13.25	11.75	13.25	12.25	10.88	12.00	12.00	12.63	13.00
Back Waist Length	15.13	15.38	17.13	15.13	15.50	14.63	16.00	14.75	15.00	16.00	17.88	14.63	14.25	17.25	15.50
Cross-Back Width	13.75	15.25	14.75	15.63	15.00	13.63	15.63	14.00	13.25	14.88	16.63	14.25	14.00	14.63	14.25

^aAll measurements are given in inches.

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